REMARKS

Applicants respectfully request further examination and reconsideration in view of the instant response and amendments. Claims 1-40 remain pending in the case. Claims 1-40 are rejected.

Independent Claims 1, 23 and 32 have been amended. Support for the amendments to independent Claims 1, 23 and 32 can be found in the instant application serial no. 10/698,111, among other places, at lines 15-17 on page 27, page 7 lines 18-19, page 6 lines 15-27, and original Claim 8. Lines 15-17 on page 27 states, "embodiments of the invention rely on passive observation of a scene with a visual sensor (e.g., a camera) while not requiring special behavior on the part of the objects observed…" Claims 8, 31, 35, 37, and 40 were amended to provide proper antecedent basis in light of the amendments to their respective independent Claims 1 and 32.

MISCHARACTERIZATIONS OF APPLICANTS' STATEMENTS

The Office Action dated November 15, 2007 mischaracterized Applicants' statements in the response to Office Action that was mailed May 29, 2007. In one example, the Office Action date November 15, 2007 stated in lines 2-5 on page 5, "…it is noted that the features upon which applicant relies (i.e., the class being labeled as people reaching for the items or people not reaching for items but standing still) are not recited in the rejected claim(s)…" Applicants reiterate, "…since Carrot does not teach or suggest 'processing said plan-view template at a classifier to assign a class to said plan-view template, wherein said classifier is trained to make a decision according to pre-configured parameters determined at least in part based on said class of said plan-view template,' Carrot cannot provide 'Discriminating between arm positions…discriminating between body positions…Discrimination between different types of objects, such as cars, trucks, motorcycles, and bicycles…'." The functional and/or structure recited by Claim 1 in the response was "processing said plan-view template at a classifier to assign a class to said plan-view template, wherein said classifier is trained to make a decision according to pre-configured parameters determined at least in part based on said class of said plan-view template," which

results in "Discriminating between arm positions…discriminating between body positions…Discrimination between different types of objects, such as cars, trucks, motorcycles, and bicycles…"

In another example, the second paragraph on page 4 of the Office Action mailed November 15, 2007 quotes Applicants as stating "Carrot does not assign a class to slice 167…because Carrot has no motivation to classify approximate shapes of slices or lumps." What Applicants actually stated was "However, note none of Carrot's slices 167, historical images or registered images are assigned a class. Nor would Carrot have any motivation to do so."

Applicants respectfully request that future Office Actions not mischaracterize Applicants' statements.

RESPONSE TO ARGUMENTS SECTION

The second Office Action was mailed on May 29, 2007. The third Office Action was mailed November 15, 2007. Applicants respectfully submit that Applicants have provided clarification.

35 U.S.C. §101

In paragraph 5, the Office Action rejected Claims 1-22 and 32-40 under 35 U.S.C. 101 as failing to fall within one of the four statutory categories of an invention. Independent Claim 1 has been amended to recite "digital depth data," "a classifier, that is executing on a computer system," and "wherein at least a portion of said plan-view image is transformed." The specification provides support for the amendment "digital depth data" at page 7 lines 18-19, among other places. The specification provides support for the amendment "a classifier, that is executing on a computer system," at page 6 lines 15-27, among other places. The specification provides support for "wherein at least a portion of said plan-view image is transformed" at original Claim 8, among other places. By reciting "digital depth data," and "a classifier, that is executing on a computer system," independent Claim 1 recites elements that are tied to an

apparatus, such as a computer system. Further by reciting "wherein at least a portion of said plan-view image is transformed" Claim 1 recites transforming underlying subject matter to a different state. Independent Claim 32 has also been amended in a similar manner. For any one or more of these reasons, Applicants respectfully submit that independent Claims 1 and 32 recite statutory subject matter.

35 U.S.C. §112

In paragraph 7, the Office Action rejected Claims 1-40 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Office Action goes on to state, "The Examiner has searched the specification and has not found any evidence that the application has support for claiming the specific steps of not requiring the generation of other plan-view images based on other orientations…." Applicants respectfully disagree. Applicants respectfully point out, that although the specification may not explicitly state that generating view images based on other orientations of said object are not required, the specification can still provide support for "generating a plan-view image based in part on said depth data, wherein said generating includes generating said plan-view image as if said object were viewed from above and wherein generating other view images based on different orientations of said object other than from above is not required," as recited by independent Claim 1. First, the figures only refer to generating one type of view, which is a plan-view image, as a part of visual-based recognition of an object. For example, the reader is directed to 120 on Figure 1; plan-view image coordinate system on Figures 4 and 5; 730 on Figures 7 and 8; and 840 on Figure 9. Second, referring to flowcharts 700-900, which are described at page 24 line 12 to page 27 line 13 the specification describes embodiments where only plan-views are generated as a part of visual-based recognition of an object. The specification describes that plan-view images are constructed from a horizontal slice at page 19 lines 25-26. Third, referring to Figures 4 and 5, the virtual camera 420 is positioned above and the plan-view image coordinate system is on the ground at the x-y plane. Therefore, a plan-view image is generated "…as if said object were viewed from above." For at least these reasons, the specification provides support for "generating a plan-view image based in part on said depth data, wherein said

generating includes generating said plan-view image as if said object were viewed from above and wherein generating other view images based on different orientations of said object other than from above is not required," as recited by independent Claim 1.

35 U.S.C. §102(b)

In paragraph 9, the Office Action rejected Claims 1, 3, 4, 9, 12, 19-23, 25 and 26 under 35 U.S.C. §102(b) as being anticipated by United States Patent Application Publication 2002/0050924 by Mahbub et al., (hereinafter referred to as "Mahbub"). Applicants have reviewed the cited art and respectfully submit that the embodiments of the present invention are not anticipated by Mahbub.

MPEP §2131 provides:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). ... "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim.

MAHBUB

This section describes Applicants' understanding of what Mahbub teaches. Referring to the abstract, Mahbub teaches an occupant sensor incorporates a 3-D imaging system that acquires a 3-D image of an object. The application that Mahbub describes for his 3-D imaging system involves a safety restraint system that is controlled based on the presence, position and size of the occupant (last sentence of the abstract). Also referring to the abstract, the image is segmented to remove "unwanted portions" and to identify a region of interest (ROI). A two-dimension projection is classified and a presence, size and position of an occupant can be identified. The contents thereof are classified based on 3-D features. Referring to 0059, examples of "unwanted portions" referred to in the abstract are the side door, the A-pillar, dashboard,

floor and objects outside the window. In order to identify these "unwanted portions," Mahbub takes into account front views (x-y), side views (z-y), and top views (z-x). For example, referring to lines 4-8 of 0088, Mahbub states, "…the projections of the volume on the XY, YZ, and ZX planes- respectively corresponding to the front, side, and top views of the ROI volume respectively shown in FIGS. 13, 12 and 14- are analyzed in 2-D." As a part of determining the presence, position and size of an occupant it is important to be able to detect the seat and to determine whether the seat is empty. For example, referring to paragraph 0068, Mahbub states "For an empty seat, the image comprises a seat cushion (bottom) and a seat back, which can be respectively characterized by two respective planes-a first plane characterizing the seat cushion and a second plan, at an angle relative to the first, characterizing the seat back. Figures 1b and 1c clearly depict that Mahbub uses views from more than one orientation in order to analyze a seat. Since Mahbub requires front views and side views in order to identify the presence, size, and position of an occupant, Applicants understand Mahbub to require view images that are not from above.

RESPONSE TO ARGUMENTS

The Office Action cited lines 1-5 of 0041, lines 2-4 of 0045 and lines 6-8 of 0056. Mahbub states at lines 1-5 of 0041, "The 3-D imaging system 14 can be located at a variety of locations in view of the seat 16, for example, at the headliner above, the rear view mirror and pointing towards the passenger seat…" Mahbub states at lines 2-4 of 0045, "…imaging system 14 is illustrated by a stereovision system 18 comprising a pair of substantially identical cameras 20.1, 20.2…" Mahbub states at lines 6-8 of 0056, "…the 3-D image taken from the fixed location at the headliner can be effectively viewed from any other location of choice…" The Office Action states "…this imaging system is installed in the vehicle with a fixed orientation and position…" From these statements of the Office Action, it appears to Applicants that the Office Action is assuming that because the imaging system is installed in a fixed orientation and position, that Mahbub cannot teach using view images that are not above. However, a 3-D imaging system can generate views other than a plan-view. For example, as demonstrated herein, Mahbub clearly generates front views, side views, and top views from data collected by

his 3-D imaging system. Further, Applicants understand Mahbub to require views that are not from above in order to determine the presence, position and size of the occupant (last sentence of the abstract) for at least the reason that views that are not from above are required to analyze the seat (0068), as already discussed herein. Further, one of the portions cited by the Office Action also demonstrates that Mahbub uses views that are not from above. For example, lines 6-8 of 0056 state, "…the 3-D image taken from the fixed location at the headliner can be effectively viewed from any other location of choice…" (emphasis added).

DIFFERENCE BETWEEN MAHBUB AND CLAIM 1

This section describes Applicants' understanding of at least some of the differences between what Mahbub teaches and the embodiment recited by independent Claim 1. Since Mahbub teaches using views from other orientations than from above, Applicants do not understand Mahbub to teach "generating a plan-view image based in part on said depth data, wherein said generating includes generating said plan-view image as if said object were viewed from above and wherein generating other view images based on different orientations of said object other than from above is not required," as recited by independent claim 1.

SUMMARY

For at least the reason that Applicants understand Mahbub to require front views and side views, Applicants understand Mahbub to require view images that are not from above. For at least this reason, Applicants that the embodiment as recited by Claim 1 is patentable in that independent Claim 1 recites "generating a plan-view image based in part on said depth data, wherein said generating includes generating said plan-view image as if said object were viewed from above and wherein generating other view images based on different orientations of said object other than from above is not required." For similar reasons, independent Claims 23 should also be patentable since Claim 23 also recites "wherein said generating of said plan-view image includes generating said plan-view image as if said object were viewed from above and wherein

generating other view images based on different orientations of said object other than from above is not required."

Claims 2-22 depend on independent Claim 1. Claims 24-31 depend on independent Claim 23. These dependent Claims include all of the features of their respective independent claims. Therefore, these dependent claims should be patentable for at least the reasons that their respective independent claims should be patentable.

35 U.S.C. §103(a)

In paragraph 12, the Office Action rejected Claims 1, 2, 4, 6, 9, 11, 13-15, 18, 23, 24, 26 and 28-31 under 35 U.S.C. §103(a) as being unpatentable over United States Patent 6,909,792 by Carrot et al., (hereinafter referred to as "Carrot") in view of United States Patent 5,491,627 by Zhang, (hereinafter referred to as "Zhang"). Applicants have reviewed the cited art and respectfully submit that the embodiments of the present invention are neither taught nor suggested by Carrot or Zhang, alone or in combination.

"As reiterated by the Supreme Court in *KSR*, the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries" including "[a]scertaining the differences between the claimed invention and the prior art" (MPEP 2141(II)). "In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious" (emphasis in original; MPEP 2141.02(I)). Applicants note that "[t]he prior art reference (or references when combined) need not teach or suggest all the claim limitations, however, Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art" (emphasis added; MPEP 2141(III)).

Applicants respectfully submit that "[i]t is improper to combine references where the references teach away from their combination" (emphasis added; MPEP 2145(X)(D)(2); *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)). Applicants respectfully note that "[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention" (emphasis in original; MPEP 2141.02(VI); *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). Further, Applicants respectfully submit that, "[w]ith regard to rejections under 35 U.S.C. 103, the examiner must provide evidence which as a whole shows that the legal determination sought to be proved (i.e., the reference teachings establish a *prima facie* case of obviousness) is more probable than not" (emphasis added) (MPEP 2142).

More specifically, Applicants respectfully submit that there is no motivation to combine the teachings of Carrot and Zhang because they teach away from the suggested modification.

CARROT

This section describes Applicants' understanding of what Carrot teaches. Carrot states at Col. 5 lines 57-64,

> With a patient preferably sitting facing the imaging system, the patient's breast 22 is preferably slightly compressed between pressure plates 83 (upper) and 84 (lower) in a manner that makes maximal use of prior information (such as x-ray images). In positioning the breast between the pressure plates, edges of the plates will contact the patient's chest and below the breast.

Figure 3 depict a patient's breast 22 that is compressed between pressure plates 83 and 84. Figure 8 depicts the patient's breast 22 with the suspected lesion 200 inside of the breast 22.

Therefore, Applicants' understand Carrot to teach that an object, such as a suspected lesion 200, is required to be inside of a subject, such as a patient. Further, Applicants understand Carrot to teach that the subject, along with the object, are

required to engage in special behavior, such as placing the breast inside of the pressure plates 83 and 84, so that data about the object can be obtained.

ZHANG

This section describes Applicants' understanding of what Zhang teaches. Referring to the title and the abstract, among other places, Applicants understand Zhang to teach using mammography in order to provide early detection of microcalcifications in breasts. Therefore, Applicants also understand Zhang to teach that an object, such as a microcalcification, is required to be inside of a subject, such as a patient. Further, Applicants understand Zhang to teach that the subject, along with the object, are required to engage in special behavior, such as placing the breast inside of pressure plates of a mammogram device, so that data about the object can be obtained.

DIFFERENCE BETWEEN THE CITED ART AND CLAIM 1

This section describes at least some of the differences between what the cited art teaches and the embodiment recited by independent Claim 1. Independent Claim 1 recites "receiving electronic depth data for at least a pixel of an image of an object, which is not required to be inside of a subject,…., wherein said receiving of said depth data does not require special behavior from one of said object and said subject." Since Carrot and Zhang require an object to be inside of a subject, such as a patient, and require the subject, along with the object that is inside of the subject, to engage in special behavior, such as placing the breast inside pressure plates, Applicants understand both Carrot and Zhang to teach away from "receiving electronic depth data for at least a pixel of an image of an object, which is not required to be inside of a subject,…., wherein said receiving of said depth data does not require special behavior from one of said object and said subject," as recited by independent Claim 1. Since Carrot and Zhang teach away from the embodiment recited by independent Claim 1, there is no motivation to combine either Carrot or Zhang with each other or with any other art to suggest or render obvious the embodiment recited by independent Claim 1.

SUMMARY

Applicants respectfully submit that independent Claim 1 should be patentable for at least the reasons that Carrot and Zhang both teach away from "receiving electronic depth data for at least a pixel of an image of an object, which is not required to be inside of a subject,…., wherein said receiving of said depth data does not require special behavior from one of said object and said subject," as recited by independent Claim 1. For similar reasons, Applicants respectfully submit that Carrot and Zhang both teach away from "capturing depth data for at least a pixel of an image of an object, which is not required to be inside of a subject… wherein said capturing of said depth data does not require special behavior from one of said object and said subject"as recited by independent Claim 23.

Claims 2-22 depend on independent Claim 1. Claims 24-31 depend on independent Claim 23. These dependent Claims include all of the features of their respective independent claims. Therefore, these dependent claims should be patentable for at least the reasons that their respective independent claims should be patentable.

35 U.S.C. §103(a)

In paragraph 13, the Office Action rejected Claims 5, 7, 8, 32, 33, 35-37, 39 and 40 under 35 U.S.C. §103(a) as being unpatentable over United States Patent 6,909,792 by Carrot et al., (hereinafter referred to as "Carrot") in view of United States Patent 5,491,627 by Zhang, (hereinafter referred to as "Zhang") and further in view of "First results from the Philips Optical Mammoscope" by Hoogenrand SPIE, vol. 3194, pgs 184-190, 1998 (referred to hereinafter as "Hoogenrand"). Applicants have reviewed the cited art and respectfully submit that the embodiments of the present invention are neither taught nor suggested by Carrot, Zhang, or Hoogenrand, alone or in combination.

As already discussed herein, independent Claim 1 should be patentable over Carrot and Zhang in that both Carrot and Zhang teach away from "receiving electronic depth data for at least a pixel of an image of an object, which is not required to be inside

of a subject,…., wherein said receiving of said depth data does not require special behavior from one of said object and said subject," as recited by independent Claim 1. Hoogenrand cannot be used to remedy the deficiencies in either Carrot or Zhang for at least the reason that there would be no motivation to combine either Carrot or Zhang with another art since both Carrot and Zhang teach away from "receiving electronic depth data for at least a pixel of an image of an object, which is not required to be inside of a subject,…., wherein said receiving of said depth data does not require special behavior from one of said object and said subject." Therefore, independent Claim 1 should be patentable over Carrot, Zhang, and Hoogenrand, alone or in combination. For similar reasons, independent Claim 32 should be patentable over Carrot, Zhang and Hoogenrand in that independent Claim 32 recites "generating a three-dimensional point cloud based on digital depth data for at least a pixel of an image of said object, which is not required to be inside of a subject… wherein said generating of said three-dimensional point cloud does not require special behavior from one of said object and said subject."

Claims 5, 7, and 8 depend on independent Claim 1. Claims 33, 35-37, 39 and 409 depend on independent Claim 32. These dependent Claims include all of the features of their respective independent claims. Therefore, these dependent claims should be patentable for at least the reasons that their respective independent claims should be patentable.

CONCLUSION

Based on the arguments presented above, Applicants respectfully assert that Claims 1-40 overcome the rejections of record and, therefore, Applicants respectfully solicit allowance of these Claims.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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Dated: February 27, 2009

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